

REMARKS

I. Introduction

Claims 1-8 are pending in the application.

Claim 8 has been withdrawn as being drawn to a non-elected invention.

Claims 1-7 stand rejected under 35 U.S.C. § 112¶2.

Claims 1-7 stand rejected under 35 U.S.C. §103(a).

Claim 1 is the only independent claim under review.

II. Amendments

The abstract has been amended as suggested by in the Office Action to avoid the use of "comprises" and legal phraseology.

Claim 1 has been amended to change the term "coil shaft" to --coil axis-- which is a broader term than "coil shaft" which has been interpreted by the Examiner to mean a core. The term --coil axis-- simply defines a directional axis around which the coil is wound, and it would include a coil with a core or a coil without a core. Antecedent basis for the term --coil axis-- or --coil axes-- which is the plural, may be found on at least page 5, line 12 of the specification.

III. Rejections Under Prior Art

A. Claims 1 and 3-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Twaalfhoven et al. (U.S. Pat. 4,906,878) (hereafter "Twaalfhoven") in view of Chitayat (U.S. Pat. 4,749,921) (hereafter "Chitayat") as set forth on pages 3-4 of the Office Action.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the *claimed invention* where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. Ecolchem Inc. v. Southern California Edison Co., 227 F.3d 1361, 56 U.S.P.Q.2d (BNA) 1065 (Fed. Cir. 2000); In re Dembiczak, 175 F.3d 994, 999, 50 U.S.P.Q.2D (BNA) 1614, 1617 (Fed. Cir. 1999); In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992). See also MPEP 2143.01.

Neither Twaalfhoven nor Chitayat, taken alone or in combination, disclose or suggest all the limitations of amended claim 1 to produce the claimed invention. Twaalfhoven discloses a conventional linear motor as described in Japanese Laid-open patent 63-18965 which is discussed in the background of Applicants disclosure. The cooling tube (210) of Twaalfhoven is not flat and does not have a cross section elongated in a direction parallel to the associated coil axes, as set forth by amended claim 1. In fact, Figures 7 and 9 of Twaalfhoven illustrate that the tubes (210) have a conventional round cross-section.

Chitayat discloses a linear motor with a plurality of coils 102 and a cooling tube 134. See, Fig. 8. However, Chitayat also only discloses the conventional prior art as discussed in Japanese Laid-Open Patent 63-18956. The cooling tube 134 of Chitayat is not flat and does not have a cross section elongated in a direction parallel to the associated coil axes. In fact, Figure 7 of Chitayat illustrate cooling tubes 134 to have a round cross-section.

Accordingly, as neither Twaalfhoven nor Chitayat disclose or suggest a linear motor that has a combination of elements that include a flat cooling tube having a cross section elongated in a direction parallel to the coil axes, the combination of Twaalfhoven and Chitayat does not

disclose all of the elements of amended claim 1 and thus, does not produce the claimed invention. The combination of Twaalfhoven and Chitayat does not render claim 1, nor claims 3-7 which depend on claim 1 as obvious.

B. Claim 2 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Twaalfhoven and Chitayat in view of Nieves et al. (U.S. Patent 5,323,079) (hereafter "Nieves") as set forth on page 5 of the Office Action.

The combination of Twaalfhoven and Chitayat does not disclose or suggest all of the limitations of claim 1 as discussed above. Nieves does not cure the deficiencies of Twaalfhoven and/or Chitayat and the Examiner does not appear to rely upon Nieves for such deficiencies.

Moreover, Nieves' disclosure is related to a half-coil which is used in a huge stator of an electrodynamics system. In Figure 4, a half-coil 64 includes first and second tube stacks 46 and 48, each of which have a plurality of vent tubes 50. As illustrated in Figure 6, one half coil 68 having tube stacks is electrically connected to another half coil 70 which also has tube stacks.

However, Twaalfhoven does not use a half-coil in its linear motor. The suggestion to combine features from a huge half-coil system with a linear motor system appears to be based on an application of improper hindsight.

It should be recognized that the fact that the prior art could be modified so as to result in the combination defined by the claims at bar would not have made the modification obvious unless the prior art suggests the desirability of the modification. *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986). Recognizing, after the fact, that such a modification would provide an improvement or advantage, without suggestion thereof by the prior art, rather than dictating a conclusion of obviousness, is an indication of improper application of hindsight

considerations. Simplicity and hindsight are not proper criteria for resolving obviousness. *In re Warner*, 379 f.2d 1011, 154, USPQ 173 (CCPA 1967).

Hence, as the combination of the half-coil of Nieves with the linear motor of Twaalfhoven is based on impermissible hindsight, the combination is improper under 35 U.S.C. §103(a).

IV. Conclusion

Having fully and completely responded to the Office Action, Applicants submit that all of the claims are now in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY



Lawrence Cullen
Registration No. 44,489

600 13th Street, N.W.
Washington, DC 20005-3096
(202)756-8000 MEF:MWE
Facsimile: (202)756-8087
Date: November 26, 2002



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APPENDIX

IN THE ABSTRACT:

Please delete the abstract and insert the following abstract:

In a [A] linear motor coil assembly (12), and a method for manufacturing the same, [comprises] a plurality of coils (14) are arranged in a line in a direction of movement and have [having] respective coil axes [shafts] perpendicular to the direction of movement of the motor [is provided]. A flat cooling tube (20) is arranged to meander inside the plurality of coils. The cooling tube has a cross section elongated in a direction parallel to the coil axes, and a plurality of clearance holes (25) through which coolant flows are formed inside the cooling tube. The cooling tube has interleaved folds at least equal in number to the number of coils. The coils being fitted into these folds. At the time of manufacture of the coil assembly, the coils are wound around cores that are divided for each coil, and the cores are inserted into the folds of the cooling tube. [A method of manufacturing a linear motor assembly having the aforesaid cooling tube is also disclosed.]

IN THE CLAIMS:

Please amend claims 1-3 as follows:

1. (Amended) A linear motor coil assembly for developing linear motion, comprising:

a plurality of coils arranged in a line in a direction of movement, each coil having an associated coil axis [shaft], said coil axes [shafts] being perpendicular to the direction of motion; and

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a flat cooling tube, said cooling tube having a cross section elongated in a direction parallel to the coil axes [shafts] and folds into which said coils are adapted to engage, said cooling tube meandering inside the plurality of coils.

2. (Amended) The linear motor coil assembly according to claim 1, wherein the flat cooling tube has a plurality of clearance holes for passing coolant, said clearance holes being formed in a direction parallel to the coil axes [shafts].

3. (Amended) The linear motor coil assembly according to claim 1, wherein the flat cooling tube comprises a plurality of round pipes for passing coolant, said pipes being aligned and attached in a direction parallel to the coil axes [shafts].